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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/607,619	06/30/2000	Raja Banerjea	Banerjea 6-8-10-5	8527

22186 7590 12/17/2003

MENDELSON AND ASSOCIATES PC
1515 MARKET STREET
SUITE 715
PHILADELPHIA, PA 19102

EXAMINER

GHULAMALI, QUTBUDDIN

ART UNIT	PAPER NUMBER
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2631

DATE MAILED: 12/17/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/607,619

Applicant(s)

BANERJEA ET AL.

Examiner

Qutub Ghulamali

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 October 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-13 and 15-20 is/are rejected.
- 7) ☒ Claim(s) 4 and 14 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 June 2000 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

DETAILED ACTION

Acknowledgment

1. This Office Action is responsive to the Amendment filed on 11/05/2003.

Drawings

2. This application, filed under former 37 CFR 1.60, lacks formal drawings. The informal drawings filed in this application are acceptable for examination purposes. When the application is allowed, applicant will be required to submit new formal drawings. In unusual circumstances, the formal drawings from the abandoned parent application may be transferred by the grant of a petition under 37 CFR 1.182.

Response to Arguments

3. Applicant's arguments with respect to claims 1 and 11 and subsequent dependent claims, have been considered but are moot in view of the new ground(s) of rejection. Rejections based on the newly cited reference(s) follow:

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 1, 11, and 21 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter that was not described in the specification in such a way as to enable one skilled in the art to which it pertains,

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or with which it is most nearly connected, to make and/or use the invention. The claim subject matter pertaining to: claim 1, line 5; claim 11, line 5; and claim 21, line 6, is misdescriptive. The claims recites, receiver side configured to receive digital samples in the frequency domain, however, the specification, page 4, lines 23-24 disclose the receive path includes a time domain equalizer 206 (fig. 2).

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

7. Claims 1, 3, 5-7, 11, 16, 17, and 21 are rejected under 35 U.S.C. 102(e) as being anticipated by Jones; IV et al ("Jones") (US Patent No. 6,657,950).

Consider claims 1, 11, 21, Jones teaches a modern digital communication system of translating data to be transmitted into a series of symbols, each symbol take on one of M possible complex values, a signal processing system that receives the downstream symbols (burst of symbols), an upsampler 102 (upstream) intersperses three zeroes (zero-padding) between each baseband symbol to increase the sampling rate by a factor of four to a new sampling frequency f_s (fig. 2B), with the effect of replicating the baseband symbol stream in the frequency domain, an interpolation filter selects the baseband component in the frequency domain, an successive burst of frequency domain symbols are input to an IFFT processing block 302, IFFT processing block

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302 applies the inverse Fast Fourier Transform to obtain successive burst of symbols in the time domain (col. 1, lines 40-67; col. 2, lines 1-3, 55-63; col. 3, lines 55-64; col. 4, lines 40-60).

Regarding claims 3, 13, Jones teaches an interpolation filter selects the baseband component in the frequency domain, this component is shifted to an IF frequency, and in the time domain, the real part of the shifted signal is extracted, conversion of this real part to analog produces the analog IF signal (col. 1, lines 45-54).

Regarding claims 5, 6, 7, 15, 16, 17 Jones teaches frequency response of cyclic filter 406(fig. 5C), the functionality of upsampler 404 and cyclic filter 406 into IFFT processing block 402, the N-point frequency domain sequence input to IFFT processing block 402 is zero-padded to become a 2N point frequency domain sequence with N/2 zeroes being placed before and after the original N-point sequence, IFFT processing block 402 then performs a 2N point IFFT rather than an N point IFFT, the patterns of zeroes in the frequency domain input to the 2N point IFFT matches the desired areas of attenuation for cyclic filter 406, the IFFT processing thus incorporates production of images as would occur in interpolation combined with ideal low pass filter attenuation of alternating out of band images (col. 5, lines 15-65).

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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8. Claims 2, 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jones, IV et al ("Jones") (US Patent No. 6,657,950) in view of Hsu et al ("Hsu") (US Patent 6,252,920).

Jones teaches a modern digital communication system of translating data to be transmitted into a series of symbols, each symbol take on one of M possible complex values, a signal processing system that receives the downstream symbols (burst of symbols), an upsampler 102 (upstream) intersperses three zeroes (zero-padding) between each baseband symbol to increase the sampling rate by a factor of four to a new sampling frequency f_s (fig. 2B), with the effect of replicating the baseband symbol stream in the frequency domain, an interpolation filter selects the baseband component in the frequency domain, an successive burst of frequency domain symbols are input to an Inverse Fast Fourier transform (IFFT) processing block 302, IFFT processing block 302 applies the inverse Fast Fourier Transform to obtain successive burst of symbols in the time domain (col. 1, lines 40-67; col. 2, lines 1-3, 55-63; col. 3, lines 55-64; col. 4, lines 40-60). *Jones* fails to teach transmit and receive path connected to a codec. *Hsu* discloses a communication system includes an analog-to-digital converter or a codec which converts an analog signal from an input line such as a telephone line to digital samples accessible to a host computer having native audio hardware, software executed by the host computer transfers the digital samples from the converter to the native audio hardware to provide audible sounds from the signal received on the input line, digital samples from the host computer (i.e. from a program executed by the host computer or from the audio hardware) are converted to an analog output signal transmitted on an output line. (col. 1, lines 64-67; col. 2, lines 1-9).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Jones's communication system by employing the codec to convert the

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upstream digital samples into analog modem signal for transmission in order to reduce distortion as taught by Hsu.

9. Claims 2, 3, 8-10, 12, 13, 18, are further rejected under 35 U.S.C. 103(a) as being unpatentable over Jones, IV et al ("Jones") (US Patent No. 6,657,950) in view of admitted prior art of instant application, hereinafter, referred to in fig. 1 as Prior Art.

Consider claims 2, 10, and 12, **Jones** teaches a modern digital communication system of translating data to be transmitted into a series of symbols, each symbol take on one of M possible complex values, a signal processing system that receives the downstream symbols (burst of symbols), an upsampler 102 (upstream) intersperses three zeroes (zero-padding) between each baseband symbol to increase the sampling rate by a factor of four to a new sampling frequency f_s (fig. 2B), with the effect of replicating the baseband symbol stream in the frequency domain, an interpolation filter selects the baseband component in the frequency domain, an successive burst of frequency domain symbols are input to an Inverse Fast Fourier transform (IFFT) processing block 302, IFFT processing block 302 applies the inverse Fast Fourier Transform to obtain successive burst of symbols in the time domain (col. 1, lines 40-67; col. 2, lines 1-3, 55-63; col. 3, lines 55-64; col. 4, lines 40-60). **Jones** does not disclose transmit and receive paths are coupled between DMT and a codec, and the blocks of upstream digital samples are generated for the codec and the blocks of downstream digital samples are generated by the codec. The admitted Prior Art (fig. 1), discloses a system 100 includes DMT transceiver 101 processing the modem signals in transmit (user to network) and receive (network to user) paths and codec 102 providing conversion between the bi-directional analog signals and the digital signals in the transmit and receive paths.

Consider claims 3 and 13, *Jones* teaches every aspect of the claimed invention as applied to claims 1, 11, 21 above, but fails to disclose the inverse transform module in the transmit path comprises an interpolator to generate the downstream digital samples at the second data rate. The admitted Prior Art (fig. 1), discloses a system 100 includes difference in transmission rate of the digital samples between the transmit and receive paths is compensated for in the receive path by interpolation of the digital samples provided from the CP Add 104 typically performed by an interpolation filter or upsampler, such as upsampler 105.

Regarding claims 8 and 18, *Jones* teaches every aspect of the claimed invention as applied to claims 1, 11, 21 and above, but does not disclose the transmit path further includes a copy and add module that processes the downstream digital samples to provide a periodic signal. The admitted Prior Art (fig. 1), discloses a copy and add module (CP ADD) 104 in the transmit path of system 100.

Regarding claims 9, 19, and 20, *Jones* teaches every aspect of the claimed invention as applied to claims 1, 11, 21 and above, but does not disclose the circuit is embodied in an integrated circuit include at least one processor. The admitted Prior Art, disclosed in the background of the invention does reveal that it is possible that such a circuit could be implemented in an integrated form, page 2, lines 31-32.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Martone (US Patent 6,285,720), Amrany et al (US Patent 6,584,160), Riazi et al (US Patent 6,618,367) are cited as art of interest.

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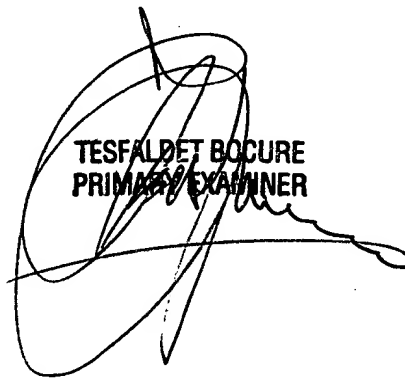
11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Qutub Ghulamali whose telephone number is (703) 305-7868.

The examiner can normally be reached on Monday-Friday from 8:00AM - 5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammed Ghayour can be reached on 703 306-3034. The fax phone number for the organization where this application or proceeding is assigned is 703 305-3988.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703 305-4750.

QG.
December 14, 2003


TESFALDET BOCURE
PRIMARY EXAMINER